THE
ELECTRIC GAS LIGHTING
COMPANY.

DIRECTORS' OFFICE, 45 MILK STREET,

BOSTON, MASSACHUSETTS.

ELECTRIC GAS LIGHTING APPARATUS, FOR STREET LAMPS,
BANKS, STORES, OFFICES, PRIVATE RESIDENCES,
WORKSHOPS AND FACTORIES.

BOSTON, FEBRUARY 5, 1883.

SMITH & PORTER, PRS., BOSTON.

AVERY LIBRARY
COLUMBIA UNIVERSITY

THE ELECTRIC

GAS LIGHTING COMPANY,

[INCORPORATED UNDER THE LAWS OF THE STATE OF MAINE.]

DIRECTOR'S OFFICE, 45 MILK STREET,

BOSTON.

CAPITAL STOCK, $250,000. 25,000 SHARES, $10 EACH.

OFFICERS.

LOUIS W. BURNHAM, PRESIDENT. HENRY R. GARDNER, SECRETARY.
JOHN N. BARBOUR, TREASURER. ALBERT M. AUSTIN, CORPORATION CLERK.

BOARD OF DIRECTORS.

JOHN N. BARBOUR, Merchant, Boston.
LUCIUS C. CHASE, Merchant, Boston.
PROF. AMOS E. DOLBEAR, of Tufts College, Somerville.
ALVAN A. SWEET, Merchant, Hopkinton.
JOHN HOPEWELL, JR., of L. C. Chase & Co., Boston.
THEO. C. HURD, Clerk of Courts, Middlesex Co., Camb.
LOUIS W. BURNHAM, President, Newton.

THE ELECTRICAL SUPPLY COMPANY,

OF ANSONIA, CONNECTICUT,

SOLE MANUFACTURING AGENTS FOR THE UNITED STATES.

SMITH & PORTER, PRS., BOSTON.

AVERY LIBRARY
COLUMBIA UNIVERSITY

Classics
AT
4100
E125
1883

Gas Lighting by Electricity.

In considering the many practical uses to which electricity has of late years been applied, the various devices for lighting gas are by no means the least important or deserving of attention.

Prominent electricians and inventors have devoted time and attention to the production of various appliances for instantaneously lighting the gas in the street lamps of a great city; and in parks, factories, churches, public buildings and private residences.

It is safe, however, to assert that none of the devices heretofore introduced have as fully met the public want in this direction as the Tirrell-Sandford apparatus, which includes both the Automatic and the Pendant Systems of lighting gas by electricity.

These valuable inventions have been extensively introduced and used in New England, and to a considerable extent in other States. They are protected by not less than a dozen letters patent, granted by the United States, all of which are now owned by

The Electric Gas Lighting Company.

No. 45 Milk Street, Boston, Mass.,

A corporation organized upon a sound financial basis, for the manufacture and general introduction of this series of electrical appliances.

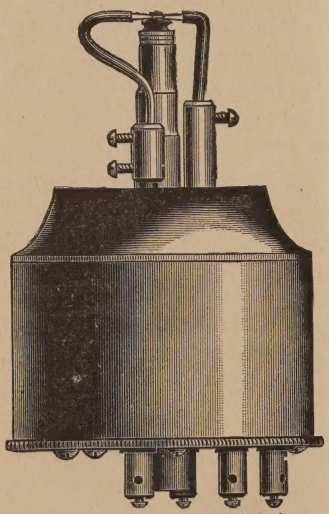
It is a notable fact that the real merits of these inventions, rather than any systematic business enterprise heretofore bestowed upon them, have attracted wide spread attention and brought them into very general use.

Both Novel and Useful.

An electric apparatus which will turn the stop-cocks for, and instantly light either a single one or two or three hundred gas-jets, by the simple touch of a press-button conveniently located—the gas being extinguished at will by touching a second one—needs only to be seen in operation to be appreciated.

The Automatic Lighter and Extinguisher, which accomplishes all this, was first patented in 1872—re-issued in 1881—improved in 1876, 78, 79 and 82; so that this company now holds five patents upon the burner.

It is particularly adapted for street lamps, gentlemen's driveways, parks, fire department houses, private dwellings, stores, banks and offices. Its mechanism is extremely simple and effective, and when properly constructed and adjusted, its action is absolutely certain and reliable.



AUTOMATIC STREET BURNER NO. 3.

For Streets, Parks, Gentlemen's Driveways, Fire Department Houses, &c. *Quarter size.* Pat. Aug. 20, '72—Re-issued June 7, '81; imp'd Nov. 28, '76, and July 16, '78.

For the purpose of lighting and extinguishing gas in street lamps upon a large scale, the automatic has no rival. Extensive practical tests have been made in the cities of Chelsea and Salem, Mass., and in New York city, in each of which places it worked for months without failure, and gave general satisfaction. —[See important reference herewith presented.]

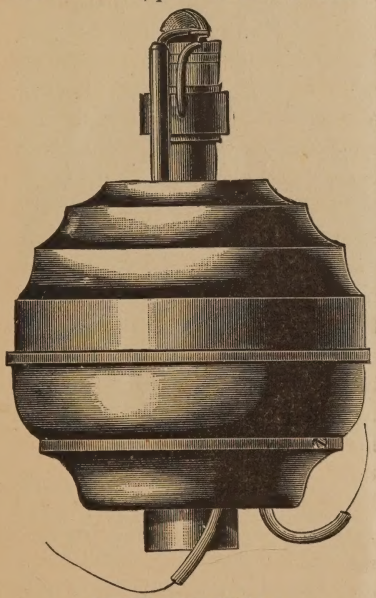
It should be noted that this method of lighting gas by electricity differs essentially from all others in two important particulars: first, the stop-cock is turned and the gas lighted simultaneously, and solely by the action of the same electric current; second, the lighting is accomplished by means of the primary spark or sparks, which operate with equal certainty in doors or out, in a dry or damp atmosphere.

Extensively Introduced for Inside Uses.

During the past four or five years the automatic gas lighters and extinguishers have stood the test of every day use in fire engine houses, churches, halls, banks, stores, public buildings and private residences throughout New England, and to a considerable extent in other states. Indeed, this has proven to be the only practical method of turning on, lighting and cutting off gas by electricity extant.

Ratchet House Automatic No. 1,

Contains an electro-magnet and an armature, a circuit-breaker, ratchet-wheel, pawl and commutator. The armature moves towards the magnet when the circuit is established through it, and away from it, by the action of a spring, when the attraction ceases.



RATCHET AUTOMATIC NO. 1.
For Private Residences, Stores, Banks and Offices.
Full Size.

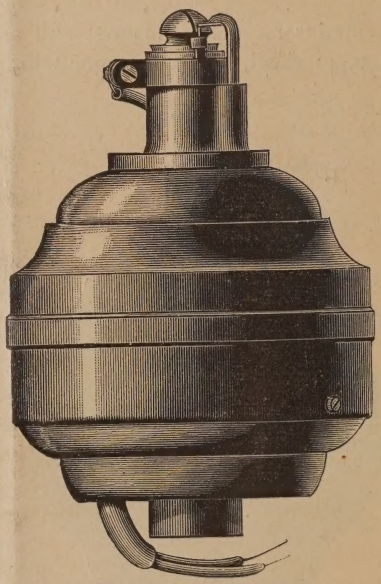
It carries the circuit-breaker, located at the burner tip, and the pawl, which are so arranged that the vibration of the armature causes the circuit to be broken and the pawl to revolve the ratchet-wheel, which, being attached to the spindle of the stop-cock, turns on the gas, which is instantaneously lighted by the electric sparks made at the burner tip from the magnet in the circuit.

By the reverse action of the commutator, the circuit is re-established, the pawl continues to revolve the ratchet-wheel which turns the stop-cock and shuts off the gas. The current from the battery is sent through the magnet by the touch of a press-button, thereby alternately making and breaking the circuit, and intermittently rotating the ratchet-wheel ; but the commutator automatically

cuts out the electric circuit when the lighting or extinguishing is accomplished, independent of the touch of the operator. This saves grounding the battery by continued pressure or imperfect connections at the press-button.

ROCKING LEVER HOUSE AUTOMATIC NO. 2,

Contains two electro-magnets, one on either side of the gas-way, which govern an armature, by a lever, so that when an electric current is established through one magnet, the armature is attracted to that magnet and the lever turns the stop-cock and lets on the gas. At the same instant the armature comes in contact with the breaking lever, the electric circuit is broken at the burner tip and the emitting sparks ignite the issuing gas. When a current of electricity is sent into the other magnet the armature is drawn to it, thus shutting off the gas.

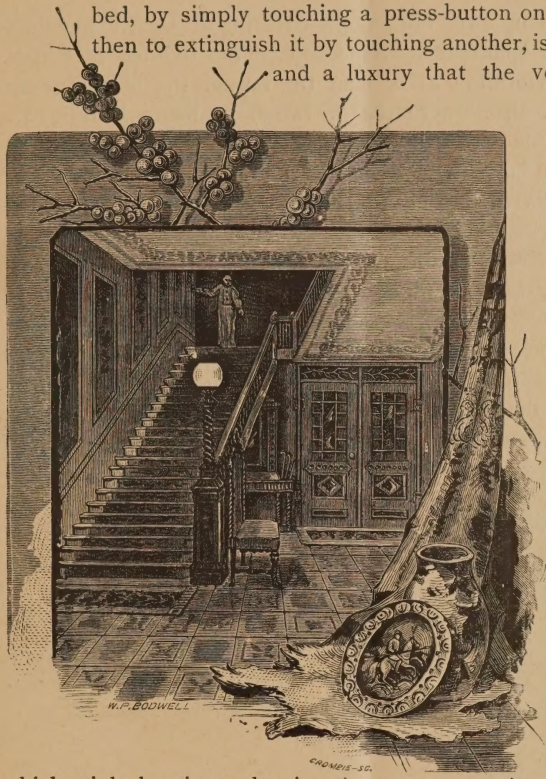


ROCKING LEVER AUTOMATIC NO. 2.
For Houses, Stores, Banks and Offices. *Full Size.*
Pat. Aug, 20, '72; Oct. 21, '79; June 7, '81.

The automatics, though adapted for special rather than general use in a house, work splendidly in connection with our hand-lighters, hereinafter described, and are, indeed, quite indispensable. For instance: an automatic should be placed in the front hall and lighted by means of a press-button at the front door, and also at the chamber door. The parlor, sitting and dining rooms should each be supplied with one, the press-buttons being conveniently located. One down cellar, with a button at the head of the stairs; one in the family chamber, to be lighted both from the bedside and at the chamber door; and so on, according to the wishes and convenience of the occupants. From five to ten automatics can thus be located to advantage in an ordinary sized house, and the balance of the fixtures supplied with the less expensive hand-lighters.

A Convenience and a Luxury.

To be able to light a gas-jet down stairs, before descending, or in one's sleeping room, without being compelled to arise from bed, by simply touching a press-button on the wall, and then to extinguish it by touching another, is a convenience and a luxury that the veriest old fogy could hardly refuse to enjoy.



Our engraving illustrates an entrance-hall to a private dwelling wherein an occupant, having occasion to go below during the night, steps from his room at the head of the stairs and touches a press button, when instantly his way is lighted ahead of him. This is only one of a score of illustrations which might be given, showing the great convenience and practical utility of these invaluable inventions.

CLAIM COVERING THE AUTOMATIC GAS LIGHTER

FROM U. S. LETTERS PATENT, DATED JUNE 7, 1881.

Claim No. 2. In an apparatus for lighting gas by electricity, the helix of an electro-magnet connected at one end with the wire through which the current of electricity is passed, and at the other end with a circuit-breaker located at the gas-burner, so arranged that the current of electricity is passed to the circuit-breaker through said magnet, attracting an armature-actuating mechanism operating automatically to turn on the gas and light the same by the effects of the primary sparks made at the tip of the burner from said magnet in the circuit.

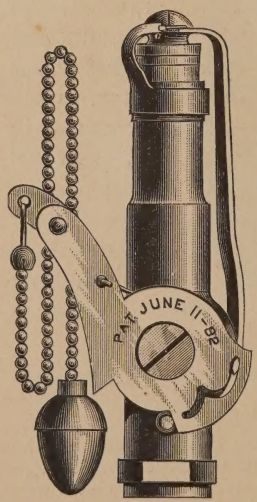
Electric Hand-Lighting Apparatus.

ITS ORIGIN AND PRACTICAL USE.—VARIOUS IMPROVEMENTS RECENTLY INTRODUCED.

This Company owns the patents covering all electric gas-lighting appliances operated by hand, where the lighting is accomplished by the vibration, at or near the burner tip, of a movable electrode; and also, where the operation by hand devices, of a movable electrode either permanently or detachably fixed to the stop-cock of the burner, serves to turn on and shut off the gas.

The AUTOMATIC and PENDANT systems of lighting gas by electricity were originated and brought into use by the same parties. The hand-lighters are more extensively used, because of more simple construction and less expensive. To produce the most satisfactory results, the two methods should be used conjointly.

When properly applied to private dwellings the apparatus is both attractive and practical in its operation, and is rapidly coming into use in all the larger cities. Indeed, a majority of the better class of residences being constructed now-a-days, are wired and fitted for the introduction of this system.



IMPROVED HAND LIGHTER, NO. 1.
Full Size.

Several novel and useful inventions have recently been added to the series of electric hand-lighters upon which patents have been secured to this Company, and which, on account of their practical simplicity, are destined to come into general use. Attention is invited to the following descriptions and illustrations of the several styles of burners now in use:

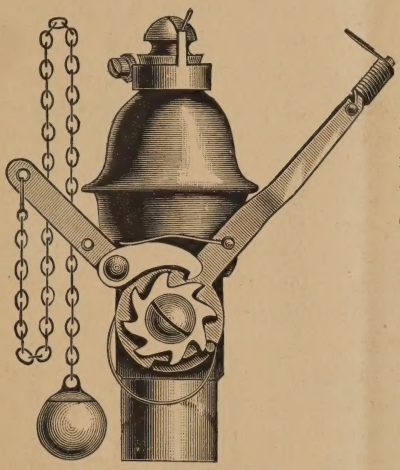
The Improved Hand-Lighter

Is attracting the attention of electricians and others, who pronounce it superior to the old-style ratchet burner, which has an elastic or sweeping contact point. The pending chain, when pulled to open or close the gas-cock, forces a lever, or springless pawl, against the teeth of the ratchet-wheel in a manner to produce a uniformly positive movement, without liability of disarrangement. The electrodes, which are com-

pactly built close to the pillar of the burner, have a rigid rather than an elastic or sweeping contact, so that only a slight movement from the cam on the lever of the gas-cock brings them together for electric action. This is a simple and compact little burner which works like a charm and is not as liable to be damaged in dusting, or from other causes, as some others.

THE BOSTON PENDANT BURNER

Has been extensively introduced and used in New England and, though often imperfectly constructed, has given satisfaction.



BOSTON PENDANT BURNER, NO. 2.
Full Size.
Pat. Sept. 14 and 28, 1880.

An eight toothed ratchet-wheel governs a stop-cock with four gas-ways, and is so arranged with pawl and spring that a single pull at the pending chain either lights or extinguishes the gas. This operation brings the movable

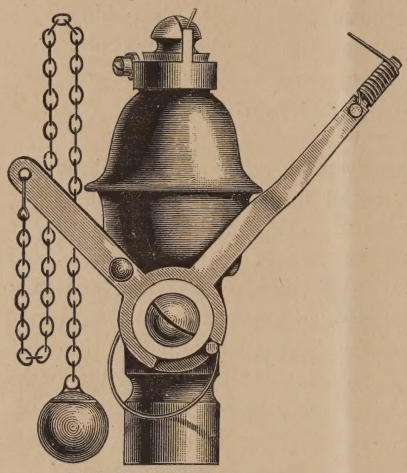
Pendant Burner, No. 2, in operation.

arm with its elastic contact point past the fixed electrode at the burner tip, there producing the electric sparks which ignite the issuing gas.

NOTE.—Burners Nos. 2, 3, 4 and 6 are made under the J. P. Tirrell patent, No. 232,661, first applied for in 1875. Important improvements were made upon the Tirrell invention in 1876, by Frank V. Sandford, and patent No. 232,304 granted him. Both patents were issued in 1880, at the end of two of the most sharply contested interference cases on record. An enterprising infringer, who lent his varied talents to the other side during the contest, graciously announces in a recent circular, that "both (Tirrell and Sandford) were awarded the *final* and *valid* patents after a most exhaustive trial of the merits of the cases." This company now owns these "valid" BOTTOM PATENTS.

THE PLAIN HAND-LIGHTER

Does not contain a stop-cock, but simply lights the gas after it is turned on by hand in the ordinary way.

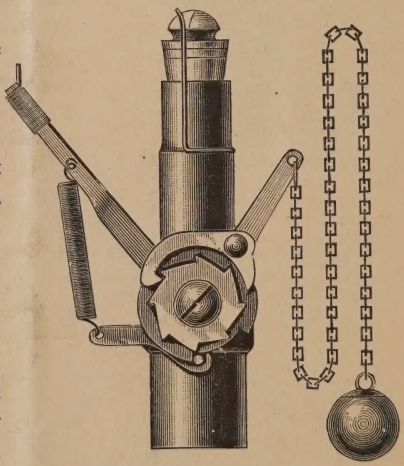


PLAIN HAND-LIGHTER, NO. 3.
Full Size. (Patented Sept. 28th, 1880.

It is not as convenient or desirable as the stop-cock burner, and is more especially adapted to workshops, factories, stores, etc., where a cheaper burner is desired. It may be preferred in servants apartments, or where the fixtures are within easy reach.

THE SANDFORD RATCHET BURNER

Has been extensively used in New York. It contains a check, or gas regulator, without the bulb, and is a handsome, well made burner, which does its work promptly and efficiently. It differs from the BOSTON BURNER in the manner of insulating; the ratchet-wheel turning in an opposite direction, and the vibrating arm being brought to its normal position by a coil spring.



SANDFORD RATCHET BURNER, NO. 4.
Full Size.
Patented Sept. 14 and 28, 1880.

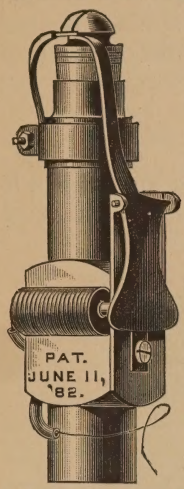
THE VIBRATING GAS LIGHTER AND BURNER.

Special attention is invited to a new vibrating gas-lighter and burner, which contains a magnet, an armature and automatic breaker. It also has a regulator for controlling the flow of gas. The stop-cock is turned

by hand and the gas lighted simultaneously, by means of a switch or press-button located at or near the key upon the bracket or chandelier.

Operation of Vibrating Burner, No. 5.

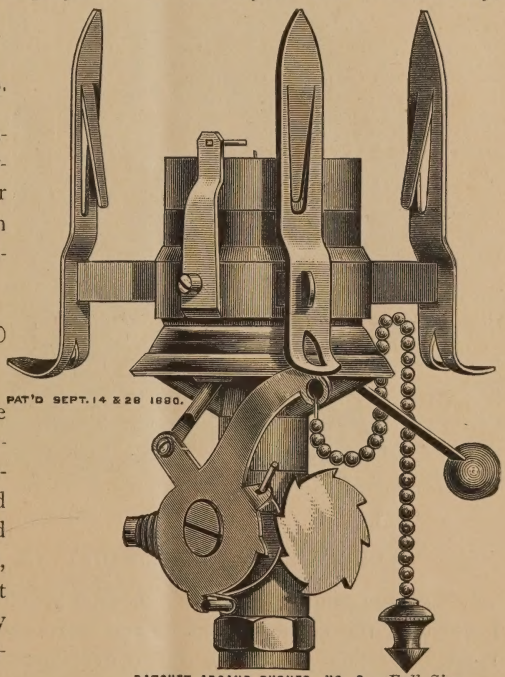
This new lighter and burner is of simple construction, and especially adapted for houses, stores, banks and offices. Many people consider it a decided improvement upon the old-style hand-lighter, the pending chain, spring, pawl, and ratchet-wheel having been dispensed with. As the common stop-cock is employed and turned by hand in the usual way, the burner is not liable to get out of order, while all danger and discomfort from gas leakage is obviated by its use.



VIBRATING GAS LIGHTER, NO. 5.
Full Size.

RATCHET ARGAND BURNER.

About the same mechanism is employed upon the ARGAND LIGHTER and BURNER as is found in numbers one, two, three and four, and it works with equally positive and satisfactory results.



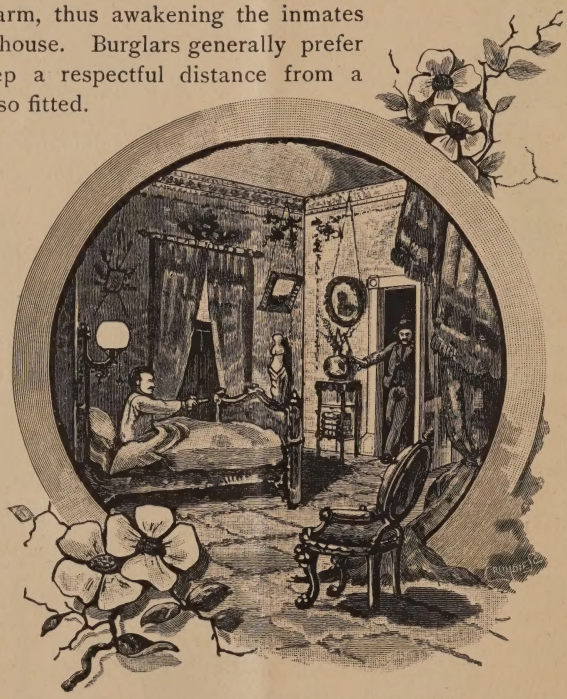
RATCHET ARGAND BURNER, NO. 6.—*Full Size.*

All the various styles of burners may be seen in practical operation at the Company's office, where orders will be taken for fitting

houses, stores, banks and offices, in the most approved manner. The apparatus can be readily applied to any first class dwelling house at a day's notice, and without disturbing the occupants or blemishing the premises.

The Burglar Alarm

Is often associated with the AUTOMATIC, so that any attempt to enter a door or window will instantly light the gas and sound the alarm, thus awakening the inmates of the house. Burglars generally prefer to keep a respectful distance from a house so fitted.



Convenience and Comfort vs. Expense.

For domestic purposes this method is extremely attractive, on account of the economy, safety and neatness with which it operates. It adds greatly to the convenience and comfort of the household, doing away, as it does, with the use of matches and the danger of fire resulting therefrom. The expense of its introduction is easily within the means of property owners desirous of

enjoying not only the ordinary comforts of life, but some of the luxuries. Hundreds of families in New England, who have the apparatus in their residences, find that it administers to their comfort and happiness to such an extent as to render it a household necessity—the cost of which is hardly worth a second thought. To give it up after having become accustomed to its use, would be like exchanging coal gas for the tallow candle.

Plans for Developing and Protecting the Business. A New Departure.

The utility of these inventions having been established by the test of every day use in hundreds of private residences, stores, banks and offices in the New England and other States, the owners now propose to introduce them into more general use throughout the country. To this end, licenses to vend the apparatus will be granted to competent and responsible electricians, who will give special attention to this branch of the business.

Owing to a general lack of knowledge and practical experience in the manufacture and use of electric gas lighting apparatus, it is not strange that its introduction should have been attended with some difficulties at the start. Those most experienced in the work, however, find that it invariably operates efficiently when properly constructed and put up.

In view of these facts, the management of this Company recently decided to arrange with one competent and responsible concern to undertake the manufacture and sale of the gas-lighters and extinguishers for the whole country, retaining under its own control the agents who vend the goods. Under this arrangement only standard goods will be produced, and competent and reliable parties licensed to introduce them into use. To this end, a business alliance was recently formed with

The Electrical Supply Company,

Of Ansonia, Conn., Warehouse, 109 Liberty St., New York,

and that company having been appointed SOLE MANUFACTURING AGENT for the United States, will hereafter supply the electric gas lighting apparatus to the licensees of this Company.

All the different styles of burners, containing the latest improvements of value, are now made from first class materials, in a thorough and approved manner, under the most carefully drawn specifications. In fact, they are not only more substantially and perfectly constructed than ever before, but are furnished to the trade at much lower prices than have heretofore prevailed for inferior goods.

A full line of the apparatus, together with the necessary outfit of electrical supplies, will be kept in stock at the Manufacturers' Warehouse, No. 109 Liberty St., New York, and sold to the licensed agents of The Electric Gas Lighting Company, Office, No. 45 Milk St., Boston, Mass. The wants of the trade in this line will be carefully studied and promptly supplied.

By securing such license to vend, parties will not only be protected from petty infringers and irresponsible competitors, but will be enabled, for the first time in the history of the business, to obtain reliable, standard goods at reasonable and uniform prices.

The forming of this alliance with THE ELECTRICAL SUPPLY COMPANY, and the carrying out of the business plans and purposes herein set forth, necessitates the following

NOTICE TO THE PUBLIC.

In furtherance of the interests of THE ELECTRIC GAS LIGHTING COMPANY, of Boston, Massachusetts, the parties holding its licenses, and the public generally, notice is hereby given to all parties engaged or interested in the manufacture or sale of ELECTRIC GAS LIGHTING APPARATUS, that the said Company owns patents which cover all Automatic Gas Lighters and Extinguishers, *wherein a current of electricity, starting from a common electric battery and passing through an electro-magnet, operates an armature which actuates mechanism for turning the gas on and off; and for lighting the same by means of the primary spark or sparks made at the burner tip from said magnet in the circuit.* Said Company also owns patents covering all Electric Hand Lighting Apparatus *operated by hand, where the lighting is accomplished by the vibration, at or near the burner tip, of a movable electrode; and also, where the operation by hand devices, of a movable electrode, either permanently or detachably fixed to the stop-cock of the burner, serves to turn on and cut off the gas.*

THE ELECTRICAL SUPPLY COMPANY, of Ansonia, Conn., has been appointed sole Agent for the manufacture and sale of said apparatus for the United States. All other parties who shall hereafter manufacture or vend any of said patented devices, without license from this Company, will be promptly prosecuted as infringers, to the extent of the law. Respectfully,

BOSTON, Jan'y 25, 1883. LOUIS W. BURNHAM, *President.*

To Bell Hangers, Electricians and Others.

The management of this Company having carefully considered all phases of the electric gas lighting business, past and present, are prepared and fully determined to protect their rights. The plans for developing this business are such that those who are now manufacturing the burners, being infringers, will find, on application, that we are prepared to make such equitable arrangements for the sale and introduction of these goods as will be for their best interest.

The attention of superintendents of manufacturing establishments, halls, stores and public buildings, is especially invited to this novel, safe, economical and convenient method of lighting city gas by electricity. All persons desirous of enquiring into the merits of the system are cordially invited to call at the Directors' office, No. 45 Milk Street, Boston, where the several devices may be seen in operation.

An Item of Public Expense Worth Saving.

It is claimed, by competent judges, that the present expense of lighting and extinguishing street gas lamps by hand, together with an average of one hour's consumption of gas per day, could be saved to a city of the size of Boston, by the use of the automatic gas lighting apparatus,

The cost of lighting, extinguishing and taking care of the gas lamps in Boston during 1880, was $65,568.59. The lighting and extinguishing *alone*, could not have varied much from $35,000. If we take 10,000 street lamps, each one of which consumes four feet of gas per hour, we have an aggregate consumption of 40,000 cubic feet per hour. With gas at $2.00 per 1,000 cubic feet, it would cost $80.00 per hour, or $29,200 for 365 hours, or during a year.

Here, then, we find a saving of $35,000 in lighting and extinguishing gas lamps, and $29,200 in consumption of gas; making a total saving of $64,200 in a single year, or better than 12 per cent. upon the maximum cost of a complete electric gas lighting equipment. In the light of past experience, and the best evidence obtainable, it is safe to promise better than a six per cent. investment to cities that adopt and use the automatic street gas lighter.

There are other sources of saving, as for instance: on several nights in each month the moon is at or near its full, thus rendering gas light in point of fact, unnecessary. If preferred, however, the narrow and more densely populated streets could, as at present, be regularly lighted. If the lighter at the central station was given full discretion, the lighting could be done later or earlier, according to the condition of the weather, and a great saving of gas could thus be made.

NOTICES OF THE PRESS.

GAS LIGHTING BY ELECTRICITY.

Notwithstanding the controversies between the gas companies and electricians, careful observers agree that gas will maintain its supremacy as an agent for the illumination of dwellings, smaller public buildings, and the streets of the smaller cities and towns, while there is but little doubt that for large public buildings, manufactories, and some of the principal streets of the larger cities, lighting will be done by electricity. The gas companies have no cause to fear; not only is electricity undesirable for illuminating purposes under many conditions, but some of the recent improvements in gas lighting have made the certainty of its continued general use only the more certain. A great deal of time has been spent by prominent electricians and inventors to produce an electric apparatus capable of instantly lighting the gas in street lamps, in parks, public buildings and private residences; and of the various devices looking to this end none have so fully and perfectly met the public want as those belonging to The Electric Gas Lighting Company, Boston, Mass., of which Mr. Louis W. Burnham is President, and Mr. John N. Barbour Treasurer. At their office, 45 Milk street, these devices are on exhibition and will well repay any one interested in gas lighting by electricity or in the examination of useful and ingenious inventions to visit. The automatic gas lighting apparatus, from its simplicity and comparative cheapness, and from the fact of its perfect adaptability to private residences, is one of the most noticeable of these devices.

It will be observed that the electric gas lighter and extinguisher differs essentially from all others in two important particulars. First, the stop-cock is turned and the gas lighted simultaneously, and solely by the action of the same electric current; second, the lighting is accomplished by means of primary sparks, which operate with equal certainty in doors or out, in a dry or damp atmosphere. The business of the company is being rapidly extended into new and hitherto unoccupied fields, and having become the owners of the most recent patented improvements, cannot fail of its well-deserved success.—*Daily Evening Traveller*, May 27th, 1882.

THE ELECTRIC GAS LIGHTING COMPANY

of Boston, Mass., has, at its office, 45 Milk street, several of the most ingenious contrivances in the market for lighting and extinguishing gas by electricity. The invention may be attached to street lamps, so that the pressure of a button at headquarters will instantly light several hundred burners and as quickly extinguish them, saving thousands of dollars annually in a city of any considerable size. The arrangements for lighting single burners or chandeliers in residences and halls is equally effective and simple, doing away entirely with matches, tapers, etc., usually utilized for lighting gas-fixtures.—*Daily Globe*, May 25, 1882.

Of the many devices we have seen for instantaneous gas lighting by electricity it is safe to say that for practical, every-day use the Tirrel-Sandford inventions take precedence over all others. This celebrated apparatus, including the automatic gas lighter and extinguisher, the vibrating gas lighter and burner and the various improved hand lighting appliances, all of which, by the simplicity and certainty with which they have performed their work, have gained favor with the public wherever they have been used, and slowly won their way to the head of all gas lighting appliances.

The automatic gas-lighter and extinguisher is an apparatus by which one, by simply pressing a button, can instantaneously light one, or two or three hundred gas jets at will, and extinguish them as easily, by simply touching a second button; and for simplicity and success in lighting it cannot be equalled. As a street lamp lighter, it is unsurpassed, having been tried upon large circuits of street lamps with entire satisfaction.

The Electric Gas Lighting Company, of Boston, Mass., owning and controlling these inventions, is a corporation organized to introduce and practically develope these ingenious and valuable devices. The officers and directors are men of sterling worth and ability, whose characters are above reproach, and whose names wherever they are seen or heard are sufficient guarantees of the safety and stability of any enterprise with which they are connected. Superintendents of mills, factories and manufacturing establishments; owners of private dwellings, stores, banks and offices should witness the method in operation, or send for a descriptive pamphlet, it being the only practical method of turning on, lighting and extinguishing gas by electricity now extant.—*New York Scientific Times*, June 17th, 1882.

Efforts have been made for many years to devise a perfect system by which gas may be instantly lighted or turned off in houses, street lamps, public halls, etc., by electricity, but most of the attempts have failed of success, after a brief use of the device. It is now claimed that the inventions owned by The Electric Gas Lighting Company, 45 Milk street, Boston, fill the bill in every particular, as testimonials from parties who have used the apparatus testify. The president of the company is Louis W. Burnham, of Newton. John N. Barbour, of this city, is treasurer. For household convenience these inventions are worthy of consideration, as by their use the dangerous friction match is discarded. Parties interested should call at the office in Boston, and obtain further information.—*Cambridge Press.*

A new and ingenious process for lighting street lamps and the gas burners in private houses by electricity is being introduced. The machinery is very simple, consisting of a magnet, armature, pawl and ratchet, connected with the gas-cocks, and receiving impulse from a small, accessible and easily managed battery. The battery at the office is connected with the street lamps on the Fifth avenue side of Madison square, from 26th street down to and including the upper large cluster lamp in front of the Fifth Avenue Hotel, as well as those surrounding the Worth monument. The burners are fed through patent electric gas-cocks. Touching a small lever and thus connecting the electric wires with the battery, the jets are simultaneously supplied with gas, which is lighted by a stream of sparks from the magnets, producing instant illumination through the whole line.

The hand electric gas lighting apparatus, applicable to dwellings, is arranged on the same principle, and can be affixed to any burner, and by pulling a chain attached thereto the gas can be instantly lighted or extinguished.

The value of this invention can scarcely be too highly commended. The method is economical to cities, as the corporation can determine the precise number of hours of burning, and safely estimate the feet of gas consumed. Burglars detest the invention, for they are afraid of light. The apparatus can be connected with every door and window of a house, so that the least movement will instantly light a burner in each room. The invention has been long desired, and is another proof of the great utility of electricity.—*N. Y. Trade Reporter*, March 23d, 1878.

COMMENDATORY.

While the order for the adoption of this system was pending in the Board of Aldermen in Salem, in 1875, Prof. Moses G. Farmer, then Electrical Engineer of the U. S. Torpedo Station, at Newport, R. I., was employed in behalf of the city to investigate and report upon the practicability of the invention, with the following results:—

To the Hon. Henry L. Williams, Mayor of Salem:

SIR:—In accordance with your request, I have examined, with what care I could in the time at my disposal, the electric gas lighting apparatus now in use on a part of the street gas lamps in the city of Salem.

The object proposed to be accomplished by the use of this invention is certainly a laudable one, and the ability to light and extinguish at will, almost instantaneously, all the street lamps of a city, is something to be coveted. But the question comes up, will the invention here sought to be introduced enable you to accomplish this result? If so, will the expense of so doing be burdensome?

In answer to the first question, it appears from the statements of those persons who have attentively watched the working of the apparatus during the four or five months that it has now been in operation, that

upon the whole, its performance has been quite satisfactory. During the last two months it has performed promptly, with not a single exception, as I am informed. I see nothing in the nature of the apparatus nor in the principles of its construction, that should hinder its extension to circuits of three or four miles in extent, and embracing one or two hundred lamps in a circuit. The spark which ignites the gas is produced by the extra current induced by the interruption of a circuit which carries a current of electricity. The character of the spark depends somewhat upon the dimensions of the electro-magnet employed for working the interrupter. In general, and within limits, the larger the magnet the greater the spark. The cable which has been used for collecting the lamps into a circuit, appears to have been well made and properly laid. Gutta percha insulators under ground and under water have proved to be all that can be asked. Gutta percha is, however, not as durable when exposed to air and sunlight as a more recently introduced substance called kerite.

The following questions were asked me by a member of the City Government:

1st. Will not twenty miles or more of underground cable, running in all directions, be subject to innumerable annoyances from the laying and repairing of aqueduct, gas and water pipes, and, if so, shall we not require the services of at least one man (and he an electrician,) through the year, to keep the same in repair?

In answer to this I would say, it will be needful that the proper authorities be provided with plans, or charts, showing accurately the location of the wires, or cables, in order that they may avoid doing injury while making repairs or doing other work in the near vicinity of the cables. It will be needful that some one have the general oversight of the gas lighting system, and if the time of the present Superintendent of Lamps is not too much occupied, perhaps a small increase of his salary would be to him a sufficient inducement to undertake and perform this work. At first, and until he gets somewhat familiar with the work, it might be needful, occasionally, to ask aid from the Company which shall erect the system. I am of the opinion, however, that in a little time he could become fully qualified to oversee the work himself and see that it be properly performed.

2d. We are adding to the number of our gas lamps every year, and frequently re-locate the old posts; shall we not require the services of the Company several times every year for these purposes?

This question may be answered very much like the first. I think the Superintendent of Lamps would, in a few months, be entirely competent to attend to these alterations.

3d. A slight blow with the pick or shovel being sufficient to destroy the connection, will it not be necessary for the Street Commissioners, Water Board and Gas Company to be provided with a plan of the cable? and will they not labor at a disadvantage in striving to avoid injury to the cable?

As before remarked, proper charts or maps, showing the location of the cables, will be needed, and when digging in their immediate vicinity more care must be exercised than when digging elsewhere.

4th. Will not the wire incased in the iron posts be liable to rust?

I would answer,—No, if it be properly insulated and properly drawn in.

5th. Should the system prove a complete success, so far as lighting and extinguishing are concerned, will the advantage derived offset the

above disadvantages, together with the necessary disturbance of brick and cement sidewalks and streets for a length of twenty miles?

In answer to these questions, much may be said on both sides. The working of the electric gas lighting apparatus in Salem, thus far, has been more successful than the working of the fire alarm telegraph was in Boston during the first six months of its existence; and, if a similar question had been proposed (and it often was) with reference to the fire alarm during the first two years of its existence, many would have been found to deprecate it loudly. Its strongest opposers then are its warmest friends now, so I think in regard to this invention; at first it may be opposed on grounds of expense, but I believe that at no distant time it will come to be looked upon as a blessing.

When the moon shines, and you do not need the street lights, by means of this invention you can extinguish them. When, however, the clouds intervene, the city can be instantly lighted. Lighting could be commenced later and finished earlier, and thus a saving of gas be effected. The wages of your lamp lighters will be saved, but the expense of lamp cleaning will not be lessened; the interest on the cost must be borne, and a few hundred dollars per annum must be paid for its care and maintenance; but its convenience and utility promise so much that I would be inclined to favor its introduction.

Your ob't servant,

[Signed,] MOSES G. FARMER,

Electrical Engineer.

In consideration of this report, and an equally favorable one from the Committee on Street Lights, for the city of Salem, the Mayor was instructed by the Board of Aldermen to contract for its introduction throughout the city; but owing to the financial inability of the parties then controlling the inventions, the contract was not completed.

Treasurer Electric Gas Lighting Co.

DEAR SIR:—Your patent street gas lighting apparatus which you placed upon the two mile circuit of lamps in Ward Three, Salem, over six months ago, has worked successfully. During the last three months the Supt. of Lamps has reported to me each time that he has lighted up, and the Captain of Police, who has extinguished the lights in the morning, has done the same. They have not reported a single failure in any instance during this time. I have taken pains to investigate the system thoroughly and think it a success.

We have examined the cable which has lain underground since last fall, and cannot find that the unusually severe winter, or the breaking up of the frost has had any effect upon it whatever.

Respectfully yours,

WM. A. BROOKS,

Chairman "Com. Lamps and Lighting," Salem, Mass.

Treasurer Electric Gas Lighting Co.

DEAR SIR:—Your apparatus for lighting gas by electricity in street lamps has performed its work faithfully and promptly. The past winter has been one of more than ordinary severity; the frost penetrated the earth some four or five feet below your cable, yet in all this period (from December to May,) your lighting apparatus has not missed once. It affords me great pleasure to recommend it for its labor saving, promptness and economy.

I would further add, that, for the past two months, the apparatus which your patents cover has been entirely under my care, and I find it so simple and easy of control that any person with ordinary common sense can manage it. Yours, &c.,

AMOS STILLMAN,
Supt. of Lamps, Salem, Mass.

We present herewith a few of the many testimonials more recently received by the Company, certifying to the great novelty and practical value of its inventions.

J. H. Stevens, Esq. LYNN, Mass., January 6th, 1883.

DEAR SIR:—Our automatic electric burners, which you connected with the fire alarm gongs in our steam fire engine houses, for the purpose of turning on and instantly lighting the gas at an alarm of fire, have been working for three years with perfect success and make a saving in our gas bills of considerably more than fifty per cent. Our Fire Department is much pleased with them. Yours truly,

E. L. HILLER,
Supt. of Lynn Fire Alarm.

---

14 BROMFIELD STREET, BOSTON,
LOUIS W. BURNHAM, ESQ., Dec. 15th, 1882.

President of The Electric Gas Lighting Co.,
No. 45 Milk Street, Boston.

DEAR SIR:—I have handled electric gas lighting appliances for a number of years, and have found nothing in this line as reliable and well adapted for either public or domestic use as the Automatic apparatus owned by your Company. I have used it for lighting the gas in fire engine houses during the past four or five years, and it has given perfect satisfaction. The system enables the firemen, on retiring for the night, to turn the gas all off; and, on the first stroke of the alarm gong the gas is turned on and instantly lighted at all required points. In most instances these appliances will save, within eighteen months, the whole cost of fitting up an engine house in the most substantial manner. No fire department can well afford to be without your electric gas lighting apparatus. Very truly yours,

J. H. STEVENS,
Practical Electrician.

No. 223 WASHINGTON STREET,
BOSTON, Jan. 20, 1883.

Louis W. Burnham, Esq.,
President Electric Gas Lighting Co.

DEAR SIR:—As long ago as 1876 I had the TIRRELL ELECTRIC GAS LIGHTING APPARATUS fitted to the gas fixtures in my residence at the Highlands, and am pleased to state that it has been a great convenience and luxury. My wife cannot say enough in its favor, as it saves the perplexity of lighting matches, the smoking of globes, etc. In fact, we are charmed with it, and value it more and more each day we use it. I am glad to hear that the Company's affairs are being so shaped under your management that these valuable inventions are now likely to be introduced into general use throughout the country. Success to the enterprise. Very truly yours,

JOHN M. WAY.

Mr. J. H. Stevens. LAWRENCE, Mass., January 6th, 1883.

DEAR SIR:—In answer to your inquiries I will say that the automatic electric gas lighting apparatus which you put into all the steam fire engine houses of this city, five years ago, has always proved reliable, and is to-day working better than ever, at a merely nominal expense to the city. It is effecting more than fifty per cent. saving of gas over former years, previous to its introduction, and we also get more light just at the time it is needed. Respectfully yours,

OSCAR K. CURRIER,
Supt. Fire Alarm, Lawrence, Mass.

J. H. Stevens, Esq. WORCESTER, Mass., Feb. 16, 1875.

DEAR SIR:—The electric gas lighting apparatus which you have put up in Mechanics Hall, is working very satisfactorily and doing all that you claimed for it. Very truly yours,

C. W. WENTWORTH, *Supt.*

Extract from the Report of Chief Engineer of the Fire Department, Lawrence, Mass., for the year ending Dec. 31, 1879:

The "Electric Gas Lighting Apparatus" which was introduced into all our engine houses a year ago last January, continues to give unbounded satisfaction, and I think the following statement will show that the claims of Messrs. Webb & Stevens, of Boston, who represent the patents, have been made good, viz: that they would make a saving in our gas bills sufficient to pay for the apparatus in two years. The expense for care has been only nominal, as the Superintendent of Fire Alarm does the work without additional compensation, and it has never failed to work when required.

Every light in the house is extinguished when the men retire, and the first strokes of the alarm lights them all simultaneously. The following statement will show to what extent the city has been benefited by their use:—

The year 1876, the city paid for gas consumed in engine houses, $845.51 ; the year 1877, with one house lighted by this system part of the year, the amount paid for gas used in engine houses was $665.54; the year 1878, with all the houses lighted by this system, from February, the amount paid for gas used in engine houses was $366.74; the year 1879, with all the houses lighted with this system the entire year, the amount for gas in engine houses was $306.78, and we have had much more and better light when it was needed than we ever had under the old system. Thus, gentlemen, you will see that in this matter as in many others, nothing has been lost, but much gained by "keeping up with the times."

The following letters were taken, by permission, from the circular of the BOSTON ELECTRIC COMPANY:—

[From the President of the Mass. Charitable Mechanic Association.]

W. R. Nutting, Esq., Manager, etc. BOSTON, Dec. 24, 1879.

DEAR SIR:—I have the pleasure of saying our residence was expeditiously and skilfully fitted by your assistants with your electric lighting apparatus, and thus far it has worked to a charm, saving time, care and expense. Both the automatic and pendant lights do their full duty. With a mastery of the principle of the application, servants and children, equally with the heads of the family, can operate readily this great improvement in gas lighting. I am, very truly yours,

314 Columbus Avenue. CHAS. W. SLACK.

[From A. MACULLAR, ESQ., of Macullar, Parker & Co., Boston.]

WORCESTER, Mass., Aug. 10, 1881.

GENTLEMEN:—Your electric lighting apparatus has been in use in my house now for nearly four years, and I can only speak in the highest terms regarding it. I would not be without it. It is something that should be universally used; I am satisfied that it would only take one trial to recommend it to favor. Very truly yours,

ADDISON MACULLAR.

Boston Electric Co. WORCESTER, Mass., May 12, 1881.

GENTS:—Your electric gas lighting apparatus has been in use in my house and stable for over three years, and it is a perfect success. It has not required one dollar's worth of repairs, and now works as well as when first put in. My wife thinks she could not be without it, it is so convenient to be able to light the gas without waiting for a servant or climbing upon a chair or stool; and it is so cleanly—there are no burnt matches left lying about to soil the carpets or mantles, nor are the walls in danger of being defaced by their scratches. We would not be without this apparatus on any account; even if I were to hire a house for three or five years, I would fit it up at my own expense, rather than be without it. Yours truly,

H. M. HEDDEN.

[From Rev. Wm. H. Willcox.]

Boston Electric Co. Malden, July 1, 1881.

Gentlemen:—I have had your electric gas lighting apparatus at work in my house for nearly two years, and I can scarcely find any words of commendation that would be two emphatic. I am delighted with it. It is not only a great safeguard from fire, as it dispenses with the use of matches, but it is an unspeakable convenience to be able to light the gas instantaneously at night. But I am especially pleased with the automatic arrangement. I open the door to the cellar, and instead of going down in the dark and groping about to find the burner as best I can, I have simply to press a button at the side of the door, and the gas below is instantly lighted. I have no dark stairway to go down, but my whole passage to the furnace and back is bright and clear. In a word, I think your electric apparatus one of the most successful ministers to domestic comfort which the progress of modern science has yet given us, and no one who has seen it in operation can fail to admire and earnestly desire it in his own house.

WM. H. WILLCOX.

Executive Offices, Lowell District Telephone Company,
Boston Electric Co. Lowell, Mass., May 13, 1881.

Gentlemen:—We have had your wonderful electric gas lighting apparatus in our residence for the past year, and take this method of highly commending the same. It is so simple that any one can operate it, and we are yet to hear of its getting out of order. This, with your burglar alarms, completes a convenience and necessity to every household. Having automatics and pendants on every burner, we have not had occasion to use a match for months. The safety from fire alone pays for the apparatus. We recommend all, in order to appreciate your valuable inventions, to try them. Very respectfully,

W. A. INGHAM, *President.*
CHAS. J, GLIDDEN, *Treas'r.*
Lowell District Telephone Company.

☞ **Electricians and other interested parties, in cities where there are no authorized agents, should correspond either with this Company or The Electrical Supply Company, 109 Liberty St., New York. All information as to the purchase of the Electric Gas Lighting Apparatus will be promptly furnished by the last named Company. Applications for Licenses, Descriptive Circulars, Price Lists, etc., should be addressed to The Electric Gas Lighting Company, 45 Milk Street, Boston.**

LOUIS W. BURNHAM,
President and Business Manager.

AVERY LIBRARY
COLUMBIA UNIVERSITY